ABSTRACT

The present invention enables APs to communicate with CNs in a backhaul network configuration in such a manner that the network is dynamically and adaptively self-aligning in terms of bandwidth utilization. A technique known as Black bursts is

5   adapted to a backhaul network configuration to enable access instants in communicating between APs and CNs to be automatically and dynamically self re-aligned in response to APs entering and leaving the network. Thus, APs are not required to explicitly inform each other of these changes. Real-time APs are given priority over non-real-time APs in order to ensure that real-time traffic meets bounded end-to-end delay requirements. This

10   is accomplished by decreasing the period of time that real-time APs must wait while the channel is idle before accessing the channel relative to the time period that non-real-time APs must wait before accessing the channel. Furthermore, the present invention utilizes the Black bursts technique to resolve contentions between APs attempting to access the channel simultaneously. During this resolution process, the AP that has been waiting the

15   longest to access the channel is given priority. That AP then waits an additional observation time period before transmitting over the channel. When a determination is made that the observation time period has expired and that the channel is idle, the AP transmits. The observation time period is periodically decreased. This causes the APs to attempt to access the channel earlier than in previous access instants, which results in

20   additional bandwidth being evenly spread out and consumed by the remaining APs.